

INTERSTATE COMMERCE COMMISSION.

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE GREAT NORTHERN RAILWAY NEAR REITER, WASH., ON NOVEMBER 8, 1922.

December 20, 1922.

To the Commission:

On November 8, 1922, there was a derailment of an express train on the Great Northern Railway near Reiter, Wash., resulting in the death of four employees. This accident was investigated in conjunction with a representative of the Labor and Industries Department of the State of Washington.

Location and Method of Operation.

This accident occurred on that part of the Cascade Division extending between Wenatchee and Delta, Wash., a distance of 132.5 miles, in the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The pony truck of the leading engine was derailed about 8,650 feet west of the station at Reiter, while the engines were entirely derailed approximately 3,750 feet east of this point, at a facing-point switch for eastbound trains, which leads to a siding to the left of the main track, known as Reiter Gravel Spur. Approaching the point of derailment from the west, there is a 6-degree curve to the right 1,422 feet in length, then 547 feet of tangent, a 6-degree curve to the left 1,367 feet in length, and then 782 feet of tangent, the final derailment being at the switch, near the eastern end of this tangent, while the pony truck wheels were derailed on the first-mentioned curve at a point about 300 feet east of its western end. The grade is ascending for eastbound trains, varying from 0.448 to 0.7 per cent. The track is laid with 90-pound rails, 33 feet in length, tie-plated, with 19 or 20 treated fir ties to the rail length, and ballasted with washed gravel. The weather was cloudy at the time of the accident, which occurred at about 6.40 a. m.

Description.

Eastbound train No. 28 consisted of five baggage cars, three mail cars, three express cars, and two sleeping cars, in the order named, all of steel-underframe construction, hauled by engines 1105 and 1013, and was in charge of Conductor Smith, and Engineman Brown and Maryott.

-2-

This train left Gold Bar, 3.7 miles from Reiter, at about 6.30 a. m., 7 hours and 22 minutes late, and after having proceeded approximately 2 miles the pony truck of the helper engine was derailed while traveling at a speed estimated to have been about 30 miles an hour.

From the initial point of derailment, the train continued on until the helper engine reached the spur-track switch, at which point the general derailment occurred. Engines 1105 and 1013, together with their tenders, came to rest across the main track and spur track, on their right and left sides, respectively, considerably damaged. The forward end of engine 1105 was on the north side of these tracks, while the forward end of engine 1013 extended south of the main track. The first two cars were derailed but remained upright. None of the other equipment was derailed or materially damaged. The employees killed were both enginemen and firemen.

Summary of Evidence.

At Gold Bar the helper engine was coupled to the train, after which the air brakes were tested and found to be operating properly, and the train departed. The first knowledge any of the members of the train crew had of anything wrong was when the general derailment occurred.

Conductor Smith said he found evidence that a pair of wheels had been derailed for a distance of about 4,000 *feet* before reaching the switch. He found a brake shoe about 15 feet from the first mark on the ties, and also saw several bolts, small wedges, parts of a tie rod, and one or two coil springs lying around the track. The track had been pushed out of line, and many of the bolts appeared to have been burned off by a heavy weight and were hot when he picked them up, and he concluded that the forward pair of driving wheels were the wheels which had been first derailed.

On going back to flag, Flagman Brady found marks on the inside of the right rail, but did not pay particular attention as to whether there were marks on the outside of the left rail. He also found some broken pieces of metal along the track and threw them to one side, and when Section Foreman Drewgrew approached the scene of the accident from the west, about an hour after its occurrence, he found two fragments which when fitted together formed a hub liner from a pony truck box. These were found at a point about 140 feet west of the first marks of derailment, or nearly 3,900 feet from the switch. At a point about 25 feet east of these two fragments, the section foreman found a pony truck spring equalizer. There were various marks on bolts,

-3-

ties, and rail braces, made by wheels which had been derailed to the left and which after derailment had kept within about 3 inches of the rails, while many of the bolts had been sheared off. The section foreman also found that the track on the curve to the left approaching the point of accident had been thrown out of line from 1/2 inch to 3 inches.

Engine 1105 is of the 2-8-0 type, having a total weight, engine and tender, of 317,000 pounds, weight on driving wheels 179,000 pounds, and weight on truck wheels of 15,000 pounds. When Master Mechanic Brady first examined this engine at the scene of the accident, he noticed that the pony truck equalizers on the left side were missing, as were also the equalizer springs from the front and back of the pony truck box. He did not at this time notice that the hub liner was missing, but when his attention was called to what the section foreman had found, he examined those pieces, returned to the engine, and found the hub liner missing from the left pony truck box. He said there were no marks on those pieces such as would have been made by a wheel flange, also that the hub liner which was broken had been placed in the pony truck box approximately three weeks prior to the day of the accident. In his opinion, the accident was due to the losing of the hub liner from the left side of the engine truck, and he thought this might have permitted the equalizer pin on this side to come in contact with the wheel, thereby shearing the pin, or knocking it out, allowing the equalizer and equalizer spring to fall out, thus reducing the load on the engine truck journal on the left side, and as the helper engine was at the time rounding a curve to the right, the wheel on the left became derailed.

Superintendent McDonough said he made careful examination of the track for about 200 feet each way from the initial point of derailment, and found it to be in good condition. He also found that the wheel marks on the right side were very pronounced, while there were only slight marks on the left side. He thought the accident was due to the loss of the hub liner and equalizer.

An examination of the broken hub liner disclosed it had recently broken loose from the box, two of the hub liner studs showing very recent breaks, indicating the liner was in place when the equalizer dropped out of place; the other six studs possessed grease marks, indicating they were not properly adhering to the box. The hub liner that broke was 1 1/2 inches in thickness; at the point where it broke, on the top, there was a flaw 7/16 inch deep, and a

very recent break of 15/16 inch. There were marks on the engine frame clearly indicating where a wheel had been rubbing, and there were also marks to show where the truck frame had been struck by the bolts in the engine frame. Subsequent examination of the engine disclosed that the hub liner on the right side also was missing, and apparently had been for some time prior to the occurrence of the accident. With both liners missing, the total lateral motion would have been about 2 1/8 inches. The flanges and axles were in good condition, although the engine appeared to have been running to the left.

Conclusions.

This accident was caused by the defective condition of the pony truck of helper engine 1105.

Inasmuch as the equalizer pins, one equalizer, and springs, were not found, it is impossible to determine definitely just what did occur, but apparently the loss of the equalizer, equalizer pin, or spring, or of all three, on the left side of the pony truck, caused the forward end of the engine to sag on this side, and the weight on the left wheel as the engine rounded the 6-degree curve to the right transmitted a shearing strain on the hub liner, which, as evidently only two of the eight hub liner studs were holding, broke it in two, and caused it to drop out of place. This permitted the truck body to move over toward the left, while the engine frame rested on the wheel so as to hold it practically rigid and prevent normal curving of the truck, resulting in its derailment.

All of the employees involved were experienced men. At the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,

Chief, Bureau of Safety.